

(PCT Article 36 and Rule 70)

Date of submission of the demand	Date of completion of this report
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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/013013

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1, 2, 4-16 as originally filed/furnished
- pages* 3, 3a received by this Authority on 27.09.2005 with letter of 02.09.2005
- pages* _____ received by this Authority on _____
- ☒ the claims:
- nos. _____ as originally filed/furnished
- nos.* _____ as amended (together with any statement) under Article 19
- nos.* 1-15 received by this Authority on 27.09.2005 with letter of 02.09.2005
- nos.* _____ received by this Authority on _____
- ☒ the drawings:
- sheets 1/7-7/7 as originally filed/furnished
- sheets* _____ received by this Authority on _____
- sheets* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1.	Statement		
	Novelty (N)	Claims <u>1-15</u>	YES
		Claims _____	NO
	Inventive step (IS)	Claims <u>1-15</u>	YES
		Claims _____	NO
	Industrial applicability (IA)	Claims <u>1-15</u>	YES
		Claims _____	NO
2.	Citations and explanations (Rule 70.7)		
1.	<p>The present report makes reference to the following documents:</p> <p>D1: DE 44 37 380 A1 (FA. J. EBERSPAECHER, 73730 ESSLINGEN, DE) 13 July 1995 (1995-07-13)</p> <p>D2: US 3 343 250 A (BERTO CHARLES W ET AL) 26 September 1967 (1967-09-26).</p>		
2.	<p>INDEPENDENT CLAIM 1</p> <p>Document D2, considered to be the closest prior art, discloses (the references in parentheses are to said document):</p> <p>a method for producing a curved, double-skinned component (figure 3), comprising an inner pipe (10) and an outer pipe (16), with an interstitial space (26) between the inner pipe (10) and the outer pipe (16) (figure 1), said method having the following steps:</p> <p>- supplying the inner pipe (10) and the outer pipe (12);</p> <p style="text-align: right;">/...</p>		

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- supplying at least one spacer (12), the thickness thereof approximately corresponding to the space, said spacer being mounted on the inner pipe (10) (column 3, lines 1-4);
- combining the inner pipe and the outer pipe to form a composite structure (column 3, lines 10-12), the spacer (12) filling only part of the interstitial space between the inner pipe (10) and the outer pipe (16) in an axial direction (figures 1 and 2); and
- bending the composite structure formed of the inner and the outer pipes (column 3, lines 13-49).

The subject matter of claim 1 differs from that of D2 in that the spacer is made of a plastics material which, when burnt off, is substantially transformed into only low molecule fission products.

In this way, it is possible for the spacer to be burnt off in a virtually residue-free manner, thereby rendering it possible to incorporate the finished component together with the spacer into the exhaust gas system of an internal combustion engine. When used for the first time, the spacer is burnt off, no damage being caused, for example to catalytic converters, by high-molecular fission products. There remains a double-skinned component with no thermal bridging between the inner and outer pipes.

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Although D1, for example, discloses the use of virtually residue-free plastics materials in exhaust gas systems, so that these can be burnt off the first time the system is used, said document contains nothing to suggest also making the spacers of the same type of material. In D1, a spacer sleeve in a sliding seat is made of a similar plastics material but the spacers between the inner and outer pipes consist of wire mesh, which remains between the pipes and, thus, forms a thermal bridge.

The subject matter of claim 1 is therefore novel and inventive (PCT Article 33(2) and (3)).

3. INDEPENDENT CLAIM 13

Document D2, considered to be the closest prior art discloses (the references in brackets are to said document):

a bent double-skinned component (figure 3), in particular a double-skinned pipe with:

- an inner pipe (10) and an outer pipe (16), an interstitial space (26) being formed between the inner pipe (10) and the outer pipe (16), and
- at least one spacer (12), the thickness thereof approximately corresponding to the space, said spacer being arranged inside the

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citations and explanations supporting such statement

interstitial space and taking up only part of said space between the inner pipe and the outer pipe in the axial direction of the component (see figure 3).

The subject matter of claim 13 differs from that of D2 in that the space is made of a plastics material which, when burnt off, is substantially transformed only into low molecule fission products.

Thus, the problem raised by the method described point 2. above is solved.

The subject matter of claim 13 is, therefore, likewise novel and inventive (PCT Article 33(2) and (3)).

4. DEPENDENT CLAIMS 2-12, 14 AND 15

Claims 2-12, 14 and 15 are dependent claims and, in consequence, also satisfy the requirements of the PCT in respect PCT Article 33(2) and (3).

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Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Independent claims 1 and 13 have not been drafted in the two-part form defined by PCT Rule 6.3(b). However, in the present case the two-part form would appear to be appropriate. Accordingly, the features known in combination from the prior art should have been placed in the preamble (PCT Rule 6.3(b)(i)) and the remaining features specified in the characterising part (PCT Rule 6.3(b)(ii)).

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The subject matter of claim 2 lacks clarity since said claim relates to a method for the operation of an internal combustion engine, not to a further embodiment of the method according to claim 1. Moreover, it is not evident for what reason the spacers should be burnt off since it is unclear where the component is located within the internal combustion engine. The same objection applies in respect of claim 14.

The analysis is based on the clarified claims 2 and 14, worded as follows:

claim 2: a method according to claim 1, according to which method the spacer supplied **is so designed** that it is burnt off during operation of **an** internal combustion engine **by the flow of exhaust gas through the inner pipe;**

claim 14: a component according to claim 13, in which the spacer is so designed that it is burnt off during operation of **an** internal combustion engine **by the flow of exhaust gas through the inner pipe.**